IUCLID

Data Set

Existing Chemical	:	ID: 85-68-7
CAS No.	:	85-68-7
EINECS Name	:	benzyl butyl phthalate
EC No.	:	201-622-7
TSCA Name	:	1,2-Benzenedicarboxylic acid, butyl phenylmethyl ester
Molecular Formula	:	C19H20O4

Producer related part

Company	:	ExxonMobil Biomedical Sciences Inc.
Creation date	:	20.04.2006

Substance related part

Company	:	ExxonMobil Biomedical Sciences Inc.
Creation date	:	20.04.2006
Status	:	
Memo	:	ACC Phthalate Ester Panel HPV Testing Group
Printing date	:	13.12.2006
Revision date	:	
Date of last update	:	13.12.2006
Number of pages	:	4
Chapter (profile)	:	Chapter: 1, 2, 3, 4, 5, 6, 7, 8, 10
Reliability (profile)	:	Reliability: without reliability, 1, 2, 3, 4
Flags (profile)	:	Flags: without flag, confidential, non confidential, WGK (DE), TA-Luft (DE), Material Safety Dataset, Risk Assessment, Directive 67/548/EEC, SIDS

1.0.1 APPLICANT AND COMPANY INFORMATION

1.0.2 LOCATION OF PRODUCTION SITE, IMPORTER OR FORMULATOR

1.0.3 IDENTITY OF RECIPIENTS

1.0.4 DETAILS ON CATEGORY/TEMPLATE

Comment : This chemical is not a member of the Transitional Phthalate Esters subcategory but its data are being used to support a hazard assessment of the subcategory.

Remark : This chemical is not a member of the Transitional Phthalate Esters subcategory but its data are being used to support a hazard assessment of the subcategory. The subcategory includes the following six CAS numbers and names:
68515-50-4 1,2,-benzenedicarboxylic acid, dihexyl ester, branched and linear (DHP)
71888-89-6 1,2-benzenedicarboxylic acid, di C6-8 branched alkyl ester, C7 rich (DIHP)
27554-26-3 1,2,-benzenedicarboxylic acid, diisooctyl ester (DIOP)
68515-44-6 1,2-benzenedicarboxylic acid, diheptyl ester, branched and linear (DinHP)
111381-89-6 1,2-benzenedicarboxylic acid (C7, C9) ester, branched and linear (79P)
111381-90-9 1,2-benzenedicarboxylic acid, (C7,C11) ester, branched and linear (711P)

The phthalate esters comprise a family of chemicals synthesized by esterifying phthalic anhydride with various alcohols in the presence of an acid catalyst. Phthalate esters are all 1,2-benzenedicarboxylic acids with side chain ester groups ranging from C1 to approximately C13. The structural characteristics of the ester side chains affect both the physical/chemical and biological properties of phthalate esters.

Phthalate esters are generally clear to yellow, oily liquids with high boiling ranges (>250oC) and low vapor pressures; properties which contribute to their high physical stability. They are readily soluble in most organic solvents and miscible with alcohol, ether and most oils. The aqueous solubility of phthalate esters is inversely related to their molecular weights. Lower molecular weight phthalates exhibit slight to moderate water solubility, whereas, higher molecular weight phthalates are insoluble.

The phthalate esters were subdivided into three subcategories based on their physicochemical and toxicological properties. The phthalate esters in this subcategory, Transitional phthalates, are produced from alcohols with straight-chain carbon backbones of C4-6. Phthalate esters containing >10% C4-6 molecules were conservatively included in this subcategory. Six of the U.S. HPV chemicals, dihexyl (DHP), diheptyl, diisoheptyl, diisooctyl, heptyl nonyl (C7, C9) and heptyl undecyl (C7, C11) phthalates are included in this subcategory. Data for this subcategory were supplemented with published information on other phthalate esters currently being assessed under the OECD SIDS program, including dibutyl (DBP), butylbenzyl (BBP), and di(2-ethylhexyl) phthalate (DEHP). Data on

a structurally similar material, di-n hexyl phthalate, was also included for read-across purposes.

Transitional phthalates have varied uses from solvents (e.g., dibutyl) to plasticizers for PVC (e.g., DEHP). Physicochemical properties also vary in that the lower molecular weight transitional phthalates are more water-soluble than higher transitional phthalates, but none would be considered to fall into the "high water soluble" category. What distinguishes these phthalates from others is their greater mammalian toxicity potential, particularly with regard to reproductive and developmental effects, compared to either the low or high molecular weight phthalate subcategories. Of the phthalates in this subcategory, DEHP appears to be the most potent for liver and reproductive/developmental endpoints.

28.04.2006

1.1.0 SUBSTANCE IDENTIFICATION

1.1.1 GENERAL SUBSTANCE INFORMATION

Purity type	:	
Substance type	:	organic
Physical status	:	liquid
Purity	:	
Colour	:	
Odour	:	

05.07.2006

1.1.2 SPECTRA

1.2 SYNONYMS AND TRADENAMES

1.3 IMPURITIES

1.4 ADDITIVES

1.5 TOTAL QUANTITY

1.6.1 LABELLING

1.6.2 CLASSIFICATION

1.6.3 PACKAGING

1.7 USE PATTERN

1.7.1 DETAILED USE PATTERN

1.7.2 METHODS OF MANUFACTURE

1.8 REGULATORY MEASURES

1.8.1 OCCUPATIONAL EXPOSURE LIMIT VALUES

1.8.2 ACCEPTABLE RESIDUES LEVELS

1.8.3 WATER POLLUTION

1.8.4 MAJOR ACCIDENT HAZARDS

1.8.5 AIR POLLUTION

1.8.6 LISTINGS E.G. CHEMICAL INVENTORIES

1.9.1 DEGRADATION/TRANSFORMATION PRODUCTS

1.9.2 COMPONENTS

1.10 SOURCE OF EXPOSURE

1.11 ADDITIONAL REMARKS

1.12 LAST LITERATURE SEARCH

1.13 REVIEWS

2.1 MELTING POINT

Value	:	-35 °C
Decomposition	:	no, at °C
Sublimation	:	no
Method	:	
Year	:	
GLP	:	
Test substance	:	other TS: 1,2-benzenedicarboxylic acid, butyl phenylmethyl ester (CAS No. 85-68-7)
Remark	:	Physicochemical data for 18 commercial phthalate esters from various sources including the public literature, manufacturing secifications, and handbook values were evaluated by an industry peer review process. Valid values were identified and presented in a phthalate ester environmental fate, peer reviewed publication. These data including the values for melting point represent the definitive and currently accepted physicochemical database for selected phthalate esters including diundecyl phthalate. There were no data on purity. Identified data sources included: Howard P, Banerjee S and Robillard K (1985). Measurement of water solubilities, octanol/water partition coefficients and vapor pressures of commercial phthalate esters. Environ. Tox. Chem 4, 653-661. Howear P (1989). Handbook of Environmental Fate and Exposure Data for Organic Chemicals: Vol I. Large Production and Priority Pollutants. Lewis Publishers, Inc., Chelsea, MI, USA. Sears J and Tourchette N (1982). Plasticizers, In: Kirk-Othmer Encyclopedia of Chemical Technology, Eds. Mark H, Othmer D, Overberger C and Seaborg G. Vol. 18, 3rd Edition. John Wiley and Sons, New York, NY, USA.
Test substance	:	1,2-benzenedicarboxylic acid, butyl phenylmethyl ester (CAS No. 85-68-7)
Reliability	:	(2) valid with restrictions Although the original reference was not retrieved and reviewed for quality, this robust summary has a reliability rating of 2 because the data are from a peer reviewed database.
Flag	:	Critical study for SIDS endpoint

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2.2 BOILING POINT

Value	:	= 387 °C at 1013 hPa
Decomposition	:	no
Method	:	other: calculated
Year	:	
GLP	:	
Test substance	:	other TS: 1,2-benzenedicarboxylic acid, butyl phenylmethyl ester (CAS No. 85-68-7)
Method	:	Boiling point calculated by MPBPWIN subroutine in EPI SuiteTM, which is based on the method of S. Stein and R. Brown in "Estimation of Normal Boiling Points from Group Contributions". 1994. J. Chem. Inf. Comput. Sci. 34: 581-587. The SMILES notation used in the calculation was: O=C(OCc(cccc1)c1)c(c(ccc2)C(=O)OCCCC)c2
Remark	:	Environmental Protection Agency (EPA) (2000). EPI SuiteTM, Estimation Program Interface Suite, v3.12. U.S. EPA, Washington, DC, USA.
Test substance	:	1,2-benzenedicarboxylic acid, Di-C8-C10 Branched Alkyl Esters, C9 Rich (CAS No. 68515-48-0)

Reliability	:	(2) valid with restrictions The value was calculated based on chemical structure as modeled by EPI SuiteTM. This robust summary has a reliability rating of 2 because the data are calculated and not measured.
Flag	:	Critical study for SIDS endpoint

28.04.2006 (7)

2.3 DENSITY

2.3.1 GRANULOMETRY

2.4 VAPOUR PRESSURE

Value	:	= .0000249 hPa at 25 °C
Decomposition	:	no
Method	:	other (calculated)
Year	:	
GLP	:	
Test substance	:	other TS: 1,2-benzenedicarboxylic acid, butyl phenylmethyl ester (CAS No. 85-68-7)

Remark :

Physicochemical data for selected commercial phthalate esters from various sources including the public literature, manufacturing secifications, and handbook values were evaluated by an industry peer review process. Valid values were identified and presented in a phthalate ester environmental fate, peer reviewed publication. These data including the values for vapor pressure represent the definitive and currently accepted physicochemical database for selected phthalate esters including butyl benzyl phthalate.
Quantitative structure-property relationships, significant at the 99.9% level, were developed using the relevant phthalate ester data to estimate solubility in water, air, and octanol, where V = the Le Bas molar volume (cm3 mol-1). The Le Bas molar volume used for butyl benzyl phthalate ester was 364.8 cm3 mol-1.

Log CS(WL) = -0.012V + 5.8, n = 35 (solubility in water)
r2 = 0.98, SE = 0.39

Log CS(AL) = -0.013V - 1.3, n = 15 (solubility in air)
r2 = 0.87, SE = 0.33

Log CS(OL) = -0.016V + 3.4, n = 68 (solubility in octanol)
r2 = 0.19, SE = 0.41

It was recommended by the authors that the above regressions be used for predicting the three solubilities for phthalate esters with alkyl chain lengths from 1 to 13 carbons.

Test substance	:	1,2-benzenedicarboxylic acid, butyl phenylmethyl ester (CAS No. 85-68-7)
Reliability	:	(2) valid with restrictions The value was calculated based on the QSPR (quantitative structure-property relationship) three-solubility model. This robust summary has a reliability rating of 2 because the data are calculated and not measured.
Flag	:	Critical study for SIDS endpoint

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2.5 PARTITION COEFFICIENT

Partition coefficient	:	octanol-water
Log pow	:	= 4.7 at 25 °C
pH value	:	
Method	:	other (calculated)
Year	:	
GLP	:	
Test substance	:	other TS: 1,2-benzenedicarboxylic acid, butyl phenylmethyl ester (CAS No. 85-68-7)
Remark	:	Physicochemical data for 22 selected commercial phthalate esters from various sources including the public literature, manufacturing secifications, handbook values, and computer modeling were evaluated by an industry peer review process. Valid values were identified and presented in a phthalate ester physicochemical properties, peer reviewed publication. These data including the values for octanol-water partitioning represent the definitive and currently accepted physicochemical database for selected phthalate esters including butyl benzyl phthalate. Quantitative structure-property relationships, significant at the 99.9% level, were developed using the relevant phthalate ester data to estimate solubility in water, air, and octanol, where V = the Le Bas molar volume (cm3 mol-1). The Le Bas molar volume used for butyl benzyl phthalate ester was 364.8 cm3 mol-1. Log CS(WL) = -0.012V + 5.8, n = 35 (solubility in water) r2 = 0.98, SE = 0.39 Log CS(AL) = -0.013V - 1.3, n = 15 (solubility in air) r2 = 0.87, SE = 0.33 Log CS(OL) = -0.016V + 3.4, n = 68 (solubility in octanol) r2 = 0.19, SE = 0.41 It was recommended by the authors that the above regressions be used for predicting the three solubilities for phthalate esters with alkyl chain lengths from 1 to 13 carbons.
Test substance	:	1,2-benzenedicarboxylic acid, butyl phenylmethyl ester (CAS No. 85-68-7)
Reliability	:	(2) valid with restrictions The value was calculated based on the QSPR (quantitative structure-property relationship) three-solubility model. This robust summary has a reliability rating of 2 because the data are calculated and not measured.
Flag	:	Critical study for SIDS endpoint

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2.6.1 SOLUBILITY IN DIFFERENT MEDIA

Solubility in	:	Water
Value	:	= 3.8 other: mg/l at 25 °C
pH value	:	
concentration	:	at °C
Temperature effects	:	
Examine different pol.	:	
pKa	:	at 25 °C
Description	:	
Stable	:	
Deg. product	:	
Method	:	other: calculated

Year	:	
GLP	:	
Test substance	:	other TS: 1,2-benzenedicarboxylic acid, butyl phenylmethyl ester (CAS No. 85-68-7)
Remark	:	Physicochemical data for 22 selected commercial phthalate esters from various sources including the public literature, manufacturing secifications, handbook values, and computer modeling were evaluated by an industry peer review process. Valid values were identified and presented in a phthalate ester physicochemical properties, peer reviewed publication. These data including the values for water solubility represent the definitive and currently accepted physicochemical database for selected phthalate esters including butyl benzyl phthalate. Quantitative structure-property relationships, significant at the 99.9% level, were developed using the relevant phthalate ester data to estimate solubility in water, air, and octanol, where V = the Le Bas molar volume (cm3 mol-1). The Le Bas molar volume used for butyl benzyl phthalate ester was 364.8 cm3 mol-1. Log CS(WL) = -0.012V + 5.8, n = 35 (solubility in water) r2 = 0.98, SE = 0.39 Log CS(AL) = -0.013V - 1.3, n = 15 (solubility in air) r2 = 0.87, SE = 0.33 Log CS(OL) = -0.016V + 3.4, n = 68 (solubility in octanol) r2 = 0.19, SE = 0.41 It was recommended by the authors that the above regressions be used for predicting the three solubilities for phthalate esters with alkyl chain lengths from 1 to 13 carbons.
Test substance	:	1,2-benzenedicarboxylic acid, butyl phenylmethyl ester (CAS No. 85-68-7)
Reliability	:	(2) valid with restrictions The value was calculated based on the QSPR (quantitative structure-property relationship) three-solubility model. This robust summary has a reliability rating of 2 because the data are calculated and not measured.
Flag	:	Critical study for SIDS endpoint

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2.6.2 SURFACE TENSION

2.7 FLASH POINT

2.8 AUTO FLAMMABILITY

2.9 FLAMMABILITY

2.10 EXPLOSIVE PROPERTIES

2.11 OXIDIZING PROPERTIES

2.12 DISSOCIATION CONSTANT

2.13 VISCOSITY

2.14 ADDITIONAL REMARKS

3.1.1 PHOTODEGRADATION

Type	:	air
Light source	:	Sun light
Light spectrum	:	nm
Relative intensity	:	1 based on intensity of sunlight
Conc. of substance	:	at 25 °C
INDIRECT PHOTOLYSIS		
Sensitizer	:	OH
Conc. of sensitizer	:	1500000 molecule/cm³
Rate constant	:	.000000000011 cm³/(molecule*sec)
Degradation	:	50 % after 11.6 hour(s)
Deg. product	:	not measured
Method	:	other (calculated)
Year	:	
GLP	:	
Test substance	:	other TS: 1,2-benzenedicarboxylic acid, butyl phenylmethyl ester (CAS No. 85-68-7)
Method	:	Photodegradation rate calculated by AOPWIN ver. 1.91 based on the methods of Atkinson.
Remark	:	50% degradation after 11.6 hrs or 0.97 days based on a 12-hour day. The computer program AOPWIN (atmospheric oxidation program for Microsoft Windows) (EPI SuiteTM, 2000) calculates a chemical half-life for a 12-hour day (the 12-hour day half-life value normalizes degradation to a standard day light period during which hydroxyl radicals needed for degradation are generated), based on an OH- reaction rate constant and a defined OH- concentration. EPI SuiteTM is used and advocated by the US EPA for chemical property estimation.
Test substance	:	1,2-benzenedicarboxylic acid, butyl phenylmethyl ester (CAS No. 85-68-7)
Reliability	:	(2) valid with restrictions This robust summary has a reliability rating of 2 because the data are calculated.
Flag	:	Critical study for SIDS endpoint

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3.1.2 STABILITY IN WATER

Type	:	abiotic
t1/2 pH4	:	at °C
t1/2 pH7	:	1.4 year at 25 °C
t1/2 pH9	:	at °C
Deg. product	:	not measured
Method	:	other (calculated)
Year	:	
GLP	:	
Test substance	:	other TS: 1,2-benzenedicarboxylic acid, butyl phenylmethyl ester (CAS No. 85-68-7)
Method	:	Hydrolysis rate calculated by HYDROWIN ver. 1.67 based on work for EPA by T. Mill et al.
Remark	:	EPI SuiteTM is used and advocated by the US EPA for chemical property estimation.
Test substance	:	1,2-benzenedicarboxylic acid, butyl phenylmethyl ester (CAS No. 85-68-7)
Reliability	:	(2) valid with restrictions This robust summary has a reliability rating of 2 because the data are

calculated.

Flag : Critical study for SIDS endpoint
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3.1.3 STABILITY IN SOIL

3.2.1 MONITORING DATA

3.2.2 FIELD STUDIES

3.3.1 TRANSPORT BETWEEN ENVIRONMENTAL COMPARTMENTS

3.3.2 DISTRIBUTION

Media : air - biota - sediment(s) - soil - water
Method : Calculation according Mackay, Level I
Year :

Remark : Physicochemical data used in the calculation:

Parameter	Value w/ Units
Molecular Weight	312.37
Temperature	25°C
Log Kow	4.7
Water Solubility	3.8 g/m3
Vapor Pressure	0.00249 Pa
Melting Point	-35°C

Result : Using the Mackay Level I calculation, the following distribution is predicted for butyl benzyl phthalate:

% Distribution	Compartment
0.1	Air
2.2	Water
95.6	Soil
2.1	Sediment
0.1	Suspended Sediment
0.0	Biota

Test substance : 1,2-benzenedicarboxylic acid, butyl phenylmethyl ester (CAS No. 85-68-7)
Reliability : (2) valid with restrictions
This robust summary has a reliability rating of 2 because the data are calculated.
Flag : Critical study for SIDS endpoint
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Media : air - biota - sediment(s) - soil - water
Method : Calculation according Mackay, Level III
Year :

Remark : Physicochemical data used in the calculation:

Parameter	Value w/ Units
Molecular Weight	312.37

Temperature 25°C
Log Kow 4.7
Water Solubility 3.8 g/m3
Vapor Pressure 0.00249 Pa
Melting Point -35°C
Emissions rates used in the calculation:

Compartment	Rate (kg/hr)
Air	1000
Water	1000
Soil	1000

Half-lives used in the calculation:

Compartment	Half-life (hr)
Air	23.2a
Water	120b
Soil	420c
Sediment	420c

a - as calculated using AOPWIN version 1.91, a subroutine of the computer program EPI SuiteTM version 3.12 and normalized to a 24 hour day [Environmental Protection Agency (EPA) (2000). EPI SuiteTM, Estimation Program Interface Suite, v3.12. U.S. EPA, Washington, DC, USA.]

b - based on biodegradation data from: Bayer AG (1989) and Boethling (2000):
Bayer AG (1989). Biotic degradation - modified MITI test.

Boethling R (2000). HPVC-Screening Tool: Using Ready and Inherent Biodegradability Data to Derive Input Data for the EQC Model, Appendix 10 in Environment Canada, Environmental Categorization for Persistence Bioaccumulation and Inherent Toxicity of Substances on the Domestic Substance List Using QSARs, Results of an international workshop hosted by Chemicals Evaluation Division of Environment Canada, Nov. 11-12, 1999, in Philadelphia, PA, USA.

c - based on Boethling, R. recommendation that half-lives of 3 to 4 times longer than surface water should be used for soil and sediment.

Result : Using the Mackay Level III calculation, the following distribution is predicted for butyl benzyl phthalate:

Compartment	% Distribution
Air	2.8
Water	17.8
Soil	77.7
Sediment	1.6

Test substance : 1,2-benzenedicarboxylic acid, butyl phenylmethyl ester (CAS No. 85-68-7)
Reliability : (2) valid with restrictions
This robust summary has a reliability rating of 2 because the data are calculated.
Flag : Critical study for SIDS endpoint
12.05.2006 (10)

3.4 MODE OF DEGRADATION IN ACTUAL USE

3.5 BIODEGRADATION

Type	:	aerobic
Inoculum	:	other: Adapted domestic sewage and soil
Concentration	:	20 mg/l related to Test substance related to
Contact time	:	28 day(s)
Degradation	:	= 43 (±) % after
Result	:	
Deg. product	:	
Method	:	other
Year	:	
GLP	:	yes
Test substance	:	other TS: CAS #85-68-7; 1,2-benzenedicarboxylic acid, butyl phenylmethyl ester
Method	:	Method/Guideline - U.S. EPA 1982, CO2 Evolution, Shake Flask (modified Gledhill). Inoculum - Domestic sewage and soil. Kinetics - Not Reported Degradation Products - Not Reported Analytical Monitoring - Yes
Result	:	Concentration - Nominal test concentration = 20 mg/L for test substance and glucose. Units - % biodegradation Result - 77% primary biodegradation and 43% (s.d. +/-11%) ultimate biodegradation. Primary degradation is expressed as the loss of test substance based on analytical measurements of parent test substance. Ultimate biodegradation is expressed as the percentage of ThCO2 (based on test substance) evolved in each flask.
Test condition	:	Test Conditions - Inoculum was aged for 2 weeks prior to test initiation. The test chemical was added to flasks containing medium and inoculum. The flask were incubated and shaken in the dark for 28 days. Three replicates for CO2 evaluation and 4 replicates for primary degradation were tested. The CO2 production was captured in barium hydroxide solution. Primary biodegradation was determined at the beginning, middle and end by GC FID of entire contents of one replicate. A glucose and blank were also tested. 2 L Erlenmeyer flasks were used as test vessels. The pH at initiation was 7.0 to 7.2. Test flasks were shaken at a rate of 120 rpm at 22 +/- 2 deg C.
Test substance	:	Butyl benzyl phthalate; CAS #85-68-7 Synonym: BBP No information on purity, but BBP was analytically confirmed to be within commercial specifications.
Conclusion	:	The substance can biodegrade using an acclimated population of microorganisms obtained from a sewage treatment system and soil.
Reliability	:	(1) valid without restriction This summary is rated a "1" because it followed a U.S. EPA standard guideline, which describes a procedure specifically designed to evaluate biodegradation under acclimated conditions, and the results were reviewed for reliability and assessed as valid.
Flag	:	Critical study for SIDS endpoint
28.04.2006		(25) (26)
Type	:	aerobic
Inoculum	:	
Concentration	:	100 mg/l related to Test substance related to

Contact time	:	14 day(s)
Degradation	:	= 81 (±) % after 14 day(s)
Result	:	
Deg. product	:	
Method	:	OECD Guide-line 301 C "Ready Biodegradability: Modified MITI Test (I)"
Year	:	
GLP	:	
Test substance	:	other TS: CAS #85-68-7; 1,2-benzenedicarboxylic acid, butyl phenylmethyl ester
Result	:	At a test concentration of 100 mg/L, the test material exhibited 81% biodegradation after 14 days.
Test condition	:	The test was conducted using a guideline that corresponds to the OECD 301C, Modified MITI Test. The test material was evaluated at 100 and 30 mg/L. The inoculum was developed from sludge obtained from 4 sewage plants, 3 rivers, 1 lake, and 2 bays according to methods described in the OECD guideline.
Test substance	:	Butyl benzyl phthalate; CAS #85-68-7 Synonym: BBP No information on purity.
Conclusion	:	The test substance is rapidly biodegraded.
Reliability	:	(1) valid without restriction This summary is rated a "1" because it followed an OECD standard guideline and the results were reviewed for reliability and assessed as valid.

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3.6 BOD5, COD OR BOD5/COD RATIO

3.7 BIOACCUMULATION

3.8 ADDITIONAL REMARKS

4.1 ACUTE/PROLONGED TOXICITY TO FISH

Type	:	flow through
Species	:	Oncorhynchus mykiss (Fish, fresh water)
Exposure period	:	96 hour(s)
Unit	:	mg/l
LC50	:	= .82 measured/nominal
Limit test	:	
Analytical monitoring	:	yes
Method	:	other
Year	:	1975
GLP	:	yes
Test substance	:	other TS: CAS #85-68-7; 1,2-benzenedicarboxylic acid, butyl phenylmethyl ester
Method	:	Method/Guideline-USEPA, (660/3-75-009) Methods for Acute Toxicity Tests with Fish, 1975. Macroinvertebrates, and Amphibians. Statistical methods-Moving average angle, Probit or Bionomial concentration.
Result	:	96 hr LC50 = 0.82 mg/L (95% CI = 0.48 to 1.4 mg/L) Mean measured values were used in the LC50 calculation. Nominal test concentrations: control, 0.22, 0.45, 0.90, 1.8, and 3.6 mg/L. Mean measured test concentrations: <0.016, 0.17, 0.28, 0.48, 1.4, and 3.1 mg/L. Analytical samples were taken at time zero and on a composite of replicates at study termination. Measured values dropped slightly during the exposure period. % Mortality results at 96 hrs per replicate for control and treatment levels: Conc. (mg/L) Rep1/Rep2 Control 0 / 0 0.17 0 / 0 0.28 0 / 0 0.48 20 / 0 1.4 100 / 100 3.1 100 / 100
Test condition	:	Test treatments were prepared by using a proportional diluter modified to enhance mixing of phthalates. The dilution water was Wareham Mass. town water (untreated and unchlorinated). A concentrated stock solution was prepared and combined with dilution water prior to pumping into the diluter. The diluter delivered a series of stock dilutions to the test vessels. Test chambers were glass tanks containing 15L of solution. The diluter maintained a water turnover rate of 5 to 8 tank volumes per day. Two replicates of ten organisms were tested per treatment and control. Analytical method was Gas Liquid Chromatography (GLC) with electron capture detection. Fish mean length = 45 mm and mean wet weight = 0.76 g. Test temperature = 12 +/- 1 Deg C. The pH ranged from 7.1 to 7.4. The mean dissolved oxygen ranged from 9.3 to 9.6 mg/L. Ranges of total hardness and alkalinity as CaCO3 of the dilution water were 20 to 26 mg/L and 14 to 22 mg/L, respectively. Fish were obtained from a Montana supplier.
Test substance	:	Butyl benzyl phthalate (CAS# 85-68-7)

(1,2-benzenedicarboxylic acid, butyl phenylmethyl ester)
Synonym: BBP
Purity: 100% active ingredient

Conclusion : Test substance is toxic to fish below its water solubility level. Data selected based upon routine species, measured data and representative value, as compared with those found in reference document, Staples et al. (1997).

Reliability : (1) valid without restriction

Flag : Critical study for SIDS endpoint

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4.2 ACUTE TOXICITY TO AQUATIC INVERTEBRATES

Type : static
Species : Daphnia magna (Crustacea)
Exposure period : 48 hour(s)
Unit : mg/l
EC50 : > .96 measured/nominal
Analytical monitoring : yes
Method : other
Year : 1975
GLP : yes
Test substance : other TS: CAS #85-68-7; 1,2-benzenedicarboxylic acid, butyl phenylmethyl ester

Method : Method/Guideline - U.S. EPA, (660/3-75-009) Methods for Acute Toxicity Tests with Fish, Macroinvertebrates, and Amphibians. 1975.

Statistical methods - Moving average angle, Probit or Bionomial Concentration.

Result : 48 hr EC50 >1.4 mg/L (based upon time zero analytical samples; no effects at test substance saturation). Value was recalculated as >0.96 mg/L as per U.S. EPA current practices using mean of measured initiation and termination samples as reported in Staples et al. (1997).

Mean measured values were used in the final EC50 calculation.

Nominal test concentrations: control, 0.4, 0.7, 1.2, 1.9, and 3.2 mg/L. Mean measured test concentrations of time 0 and 48 hr values: <0.0033, 0.18, 0.21, 0.56, 0.47 and 0.96 mg/L.

Analytical samples taken at time zero and on a composite of replicates at termination. Measured values declined during study exposure in all but one test solution during the test. The high treatment solution is considered the maximum solubility achievable under the conditions of the test.

% Immobility results at 48 hrs per replicate for control and treatment levels:

Conc. (mg/L)	Rep1/Rep2/Rep3
Control	0 / 0 / 0
23.5	0 / 0 / 0
38	0 / 0 / 0
62.5	0 / 0 / 0
132	0 / 0 / 0
225	0 / 0 / 0

Test condition : Test treatments were prepared by mixing the test substance and dilution water (fortified well water) in a Polytron homogenizer for 30 minutes. The stock solution was prepared at the highest treatment concentration. Dilutions of the stock were prepared for each treatment level. Three replicates of five organisms were tested per treatment. Test vessels were

250 ml beakers with 200 ml of test solution. Analytical method was Gas Liquid Chromatography (GLC).

Test temperature = 22.5 +/- 0.5 Deg C. The pH ranged from 8.4 to 8.5 at initiation and ranged from 8.3 to 8.4 on day 2. Dissolved oxygen ranged from 7.7 to 8.5 at initiation and 7.7 to 8.0 on day 2. The range of total hardness of the dilution water was 150 to 170 mg/L. Daphnia were <24 hours old and obtained from in-house stock.

Test substance : Butyl benzyl phthalate (CAS# 85-68-7)
(1,2-benzenedicarboxylic acid, butyl phenylmethyl ester)
Synonym: BBP
Purity: unstated, but believed to be 100% active ingredient because the test material came from the same source as in the rainbow trout acute study.

Conclusion : Test substance is toxic to Daphnia below its water solubility level. Data selected based upon routine species, measured data and representative value, as compared with those found in reference document, Staples et al. (1997).

Reliability : (2) valid with restrictions
Some Daphnids were trapped at the surface in some of the exposure concentrations.

Flag : Critical study for SIDS endpoint
13.12.2006 (21) (24)

4.3 TOXICITY TO AQUATIC PLANTS E.G. ALGAE

Species : Selenastrum capricornutum (Algae)
Endpoint :
Exposure period : 6 day(s)
Unit : mg/l
EC50 : = .21 measured/nominal
Limit test :
Analytical monitoring : yes
Method : other
Year : 1978
GLP : yes
Test substance : other TS: CAS #85-68-7; 1,2-benzenedicarboxylic acid, butyl phenylmethyl ester

Method : Method/Guideline - EPA 600/9-78-018, Printz Algal Assay Bottle Test. 1978.
Statistical methods - Moving average angle, Probit or Bionomial
Test type - Static

Result : 144 hr (6 day) EC50 = 0.2 mg/L (95% CI = 0.2 to 0.3; based upon time zero analytical samples). Value was recalculated as 0.21 mg/L as per U.S. EPA current practices using mean of measured initiation and termination samples as reported in Staples et al. (1997).

Mean measured values were used in the final EC50 calculation.

Nominal test concentrations as a percent of a saturated solution: 0 (control), 3.125, 6.25, 12.5, 25.0, 50.0 and 100.0%.
Mean measured test concentrations of time 0 and 144 hr values: <0.01, <0.05, 0.05, 0.2, 0.3, 0.8, 1.3 mg/L (detection limit was 0.005 mg/L).

Analytical samples taken at time zero and on a composite of replicates at termination. In-vivo chlorophyll a, measured until less than 5% change. Both cell number and in-vivo chlorophyll a, measured at termination. Control chlorophyll a or cell counts were not reported.

Chlorophyll a percent change relative to control on sampling days and cell number on day 6 results per treatment level:

Conc. (mg/L)	Chlorophyll a percent change from control Day 3	Day 4	Day 5	Day 6	Cell # Day 6
<0.05	-4	-4	-7	-5	-14
0.05	-6	-25	-12	-7	-15
0.2	-11	-30	-19	-10	-28
0.3	-74	-71	-60	-58	-64
0.8	-92	-98	-99	-99	-99
1.3	-96	-99	-100	-100	-100

Test condition : Test substance was added to Algal Growth Medium equal to the highest test concentration (1000 mg/L) and stirred for one hour and settled for one-half hour. Fifty percent (50%) dilutions were made of this stock solution using algal growth media (dilution water and control) and tested. Initial algal concentration was 2.0 E4 cells/ml. Replicate number was not cited.

Lighting = 4,300 lux, Test temperature = 24+/-1 Deg C. The pH range was 7.1 to 7.5 at initiation and 7.0 to 8.8 on day 6. Algal culture stock was obtained from University of Texas at Austin, TX.

Test substance : Butyl benzyl phthalate (CAS# 85-68-7)
(1,2-benzenedicarboxylic acid, butyl phenylmethyl ester)
Synonym: BBP
Purity: unstated, but believed to be 100% active ingredient because the test material came from the same source as in the rainbow trout acute study.

Conclusion : Test substance is toxic to algae below its water solubility level. Data selected based upon routine species, measured data and representative value, as compared with those found in reference document, Staples et al. (1997).

Reliability : (2) valid with restrictions

Flag : Critical study for SIDS endpoint

13.12.2006 (22) (24)

4.4 TOXICITY TO MICROORGANISMS E.G. BACTERIA

4.5.1 CHRONIC TOXICITY TO FISH

Species : Oncorhynchus mykiss (Fish, fresh water)

Endpoint : other: Early Life Stage Toxicity Test

Exposure period : 109 day(s)

Unit : mg/l

NOEC : = .2 measured/nominal

Analytical monitoring : yes

Method : other

Year :

GLP : yes

Test substance : other TS: CAS #85-68-7; 1,2-benzenedicarboxylic acid, butyl phenylmethyl ester

Method : Although the study was conducted prior to the latter guideline, testing procedures generally followed the US Environmental Protection Agency, Toxic Substance Control Act (EPA-TSCA) 40 CFR, Part 797.1600 and the American Society for Testing and Materials (ASTM) Standard Guide for Conducting Early Life-Stage Toxicity Tests with Fishes (1990).

Result : Egg hatchability/survival, fry survival, and growth (length and weight) were evaluated as the biological endpoints. Butyl benzyl phthalate ester showed

no effect on hatchability, survival, or growth at its highest achievable water solubility (0.20 mg/L) under the conditions of this test.

Test condition : The study used a flow-through test system.

Test substance : The test was conducted using a uniformly ring-labeled 14C-butyl benzyl phthalate ester.

Conclusion : The chronic fish (Salmo gairdneri; now Oncorhynchus mykiss) toxicity (early life-stage) data reported for butyl benzyl phthalate are consistent with the data for several high molecular weight phthalate esters as summarized by Rhodes et al. (1995). These data clearly showed that high molecular weight phthalate esters, including butyl benzyl phthalate, did not produce chronic toxicity to a fish at or below their maximum attainable water solubility.

Reliability : (1) valid without restriction
This study is rated a "1" because it followed an accepted test guideline, used appropriate testing procedures, and applied GLP. The study procedure and results were accepted in a peer reviewed journal. Additionally, the data are consistent with known toxicological properties of similar high molecular weight phthalate ester substances.

Flag : Critical study for SIDS endpoint
13.12.2006 (1) (19)

4.5.2 CHRONIC TOXICITY TO AQUATIC INVERTEBRATES

Species : Daphnia magna (Crustacea)
Endpoint : other: reproduction rate and survival
Exposure period : 21 day(s)
Unit : mg/l
NOEC : = .28
LOEC : = 1.4
Analytical monitoring : yes
Method : other
Year :
GLP : no data
Test substance : other TS: CAS #85-68-7; 1,2-benzenedicarboxylic acid, butyl phenylmethyl ester

Method : The test method followed a procedure developed at the testing lab, Springborn Laboratories, and generally followed the Daphnid chronic testing procedure described in OECD guideline 202 (1984).

Result : Five exposure concentrations were used in the study as follows with standard deviation in parenthesis:
2.4 (0.4); 1.4 (0.3); 0.28 (0.23); 0.23 (0.09); and 0.073 (0.03)
Survival and reproduction was significantly different (p = 0.05) than the control in the two highest concentrations.

LOEC = 1.4 mg/L
NOEC = 0.28 mg/L
MATC = 0.63 mg/L

mg/L	Po % Survival Day 21	Mean F1 Survival Day 21
Control	91 (sd=2)	85 (sd=7)
2.4	2 (sd=3)	0 (sd=0)
1.4	6 (sd=5)	14 (sd=3)
0.28	88 (sd=3)	86 (sd=21)
0.23	91 (sd=2)	76 (sd=9)
0.073	91 (sd=5)	95 (sd=20)

Test condition : The exposure systems used modified proportional diluters with a 0.5 dilution factor. Materials containing plasticizers were not used in the test

systems and no cosolvents were used to prepare stock exposure solutions. The test material was added to a chemical mixing chamber for each treatment level using a gas-tight syringe with a mechanical injector. The desired amount was injected directly into the mixing chamber of the diluter with each diluter cycle.

The dilution water used for the study and culturing was well water fortified with salts to increase the hardness to 150 to 180 mg/L as CaCO3. Alkalinity ranged from 100 to 130 mg/L CaCO3, pH ranged from 7.9 to 8.3, and temperature was 21 +/- 2 deg C. Dissolved oxygen concentration was greater than 60% saturation and specific conductance was 400 to 600 umho/cm.

Five exposure concentrations were used in the study as follows with standard deviation in parenthesis:
130 (21); 59 (6); 25 (3); 16 (2); and 5.8 (1.4)

Survival and reproduction were assessed every weekday from day 7 to day 21. Offspring were counted and removed on sampling days. Food was added to test vessels three times a day on weekdays and 2 times a day on weekends and holidays.

Dissolved oxygen and temperature were monitored every weekday within one replicate test chamber of each treatment level and control. Total hardness, alkalinity, specific conductance, and pH of test solutions wee monitored weekly in one test vessel from each treatment and control.

The diluters delivered 50 ml of test solution to each chamber at a rate equivalent to 4.4 to 5.0 volume replacements daily. Illumination to the test systems was provided by Durotest fluorescent lights located above the test chambers. Sixteen hours of light were provided each day at an intensity of 2 to 4 hectolux (2.94 to 5.88 W m-2) at the solution surface.

Test solutions and control water were analyzed for phthalate ester concentration on day 0, 7, 14, and 21. Two of four replicate test chambers were analyzed on sampling days. On each sampling date, two quality assurance samples were prepared and remained with the set of samples through the extraction and analysis procedures.

Each sample was extracted three time with separate 50 ml aliquats of hexane for 2 to 3 minutes. Extracts were combined and volume reduced. Concentrates were stored in 10 ml serum vials at 0 deg C until analyzed. Analysis was by gas chromotography with an electron-capture detector.

Test substance : CAS #85-68-7; 1,2-benzenedicarboxylic acid, butyl phenylmethyl ester

Conclusion : Butyl benzyl phthalate produces chronic aquatic toxicity to invertebrates at a concentration below its maximum water solubility.

Reliability : (2) valid with restrictions
This study is rated a "2" because it used appropriate testing procedures. Although a standard test guideline was not used, the procedure was consistent with currently accepted guidelines. The study procedure and results were accepted in a peer reviewed journal. Additionally, the data are consistent with known toxicological properties of lower molecular weight phthalate ester substances.

Flag : Critical study for SIDS endpoint
13.12.2006

(19)

4.6.1 TOXICITY TO SEDIMENT DWELLING ORGANISMS

4.6.2 TOXICITY TO TERRESTRIAL PLANTS

4.6.3 TOXICITY TO SOIL DWELLING ORGANISMS

4.6.4 TOX. TO OTHER NON MAMM. TERR. SPECIES

4.7 BIOLOGICAL EFFECTS MONITORING

4.8 BIOTRANSFORMATION AND KINETICS

4.9 ADDITIONAL REMARKS

5.0 TOXICOKINETICS, METABOLISM AND DISTRIBUTION

5.1.1 ACUTE ORAL TOXICITY

Type	:	LD50
Value	:	= 2330 mg/kg bw
Species	:	rat
Strain	:	Fischer 344
Sex	:	male/female
Number of animals	:	10
Vehicle	:	other: corn oil
Doses	:	20,000, 10,000, 5000, 2500, 1250, 630, 310, 160, 80 mg/kg bw
Method	:	Directive 84/449/EEC, B.1 "Acute toxicity (oral)"
Year	:	1982
GLP	:	no
Test substance	:	other TS: 1,2-benzenedicarboxylic acid, butyl phenylmethyl ester (CAS No. 85-68-7)
Remark	:	In a range finding test, 5 male and 5 female F344 rats were administered a single dose of the test substance by oral gavage. All rats survived for 14 days when administered the following doses: 80, 160, 310, 630, and 1250 mg/kg/bw. With 2500 mg/kg bw, 2/5 male and 2/5 female rats survived. None of the rats, male or female survived doses of 5000, 10,000, or 20,000 mg/kg bw. Under the conditions of this study the test substance has a low order of acute toxicity.
Source	:	Monsanto Europe N.V. Bruxelles
Test substance	:	1,2-benzenedicarboxylic acid, butyl phenylmethyl ester (CAS No. 85-68-7); purity 97.2%

05.12.2006 (15)

Type	:	LD50
Value	:	= 2330 mg/kg bw
Species	:	rat
Strain	:	Fischer 344
Sex	:	male/female
Number of animals	:	10
Vehicle	:	other: corn oil
Doses	:	20,000, 10,000, 5000, 2500, 1250, 630, 310, 160, 80 mg/kg bw
Method	:	Directive 84/449/EEC, B.1 "Acute toxicity (oral)"
Year	:	1982
GLP	:	no
Test substance	:	other TS: 1,2-benzenedicarboxylic acid, butyl phenylmethyl ester (CAS No. 85-68-7)
Remark	:	In a range finding test, 5 male and 5 female F344 rats were administered a single dose of the test substance by oral gavage. All rats survived for 14 days when administered the following doses: 80, 160, 310, 630, and 1250 mg/kg/bw. With 2500 mg/kg bw, 2/5 male and 2/5 female rats survived. None of the rats, male or female survived doses of 5000, 10,000, or 20,000 mg/kg bw. Under the conditions of this study the test substance has a low order of acute toxicity.
Source	:	Monsanto Europe N.V. Bruxelles
Test substance	:	1,2-benzenedicarboxylic acid, butyl phenylmethyl ester (CAS No. 85-68-7);

purity 97.2%

08.12.2006 (15)

5.1.2 ACUTE INHALATION TOXICITY

5.1.3 ACUTE DERMAL TOXICITY

Type	:	LD50
Value	:	> 10000 mg/kg bw
Species	:	rabbit
Strain	:	
Sex	:	
Number of animals	:	
Vehicle	:	
Doses	:	
Method	:	other
Year	:	1976
GLP	:	no
Test substance	:	other TS: CAS #131-11-3; 1,2-Benzenedicarboxylic acid, dimethyl ester
Remark	:	10,000 mg/kg was a limit dose
Source	:	Monsanto Europe N.V. Bruxelles
Test substance	:	CAS #131-11-3; 1,2-Benzenedicarboxylic acid, dimethyl ester

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5.1.4 ACUTE TOXICITY, OTHER ROUTES

5.2.1 SKIN IRRITATION

5.2.2 EYE IRRITATION

5.3 SENSITIZATION

5.4 REPEATED DOSE TOXICITY

Type	:	
Species	:	rat
Sex	:	male/female
Strain	:	Wistar
Route of admin.	:	oral feed
Exposure period	:	90 days
Frequency of treatm.	:	daily
Post exposure period	:	none
Doses	:	151, 381, 960 mg/kg bw/day (M)
Control group	:	yes
NOAEL	:	= 151 mg/kg bw
Method	:	other
Year	:	1978
GLP	:	no
Test substance	:	other TS: CAS #131-11-3; 1,2-Benzenedicarboxylic acid, dimethyl ester

Remark	:	histopath: liver: focal necrosis; pancreas, endocrine: islet enlargement with cell vacuolization, peri-islet congestion; pancreas, exocrine: occasional pyknotic nuclei, acinar atrophy, and periacinar inflamatory cell infiltrate.
Result	:	1) 151/171 mg/kg/day M/F: NOEL no effects 2) 381/422 mg/kg/day M/F: kidney weight, incr; urinary pH, decr; kidney weight, incr. 3) 960/1069 mg/kg/day M/F: kidney weight, incr; urinary pH, decr; kidney weight, incr; liver weight, incr (F); blood, RBC, decr; liver, histopath; pancreas, histopath.
Source	:	Monsanto Europe N.V. Bruxelles
Test substance	:	CAS #131-11-3; 1,2-Benzenedicarboxylic acid, dimethyl ester

05.12.2006 (9)

Type	:	Chronic
Species	:	rat
Sex	:	male/female
Strain	:	Fischer 344
Route of admin.	:	other: Dietary
Exposure period	:	103wk
Frequency of treatm.	:	
Post exposure period	:	none
Doses	:	0, 6000, 12000 ppm in the diet (approx. 420-450 mg/kg/day or 840-900mg/kg/day)
Control group	:	yes, concurrent vehicle
Method	:	other: standard NTP methodology
Year	:	1982
GLP	:	no data
Test substance	:	other TS: CAS No. 85-68-7

Method : Groups of male and female F344 rats (NCI Frederick Cancer Research Center, Frederick, Maryland; age 5wk at start of treatment) were administered 0, 450, or 900 mg/kg/day body weight via the diet for 103 weeks. The test compound was found to be stable in feed for 2 weeks. The amount of test compound present in the feed was determined by the net ultraviolet absorbance at 275nm of 50ml methanol extracts of 2g samples. For each dietary concentration, the mean of the analytical concentration was usually within 10% of the theoretical value.

The animals were housed 5/cage with water and Wayne Lab Blox diet available ad libitum in a controlled environment (18-31 deg C, 10-88% rel. humidity, 12 hr light cycle, and 10 air changes/hr). Clinical observations were made twice daily and animals were weighed every 4 weeks. Any animals judged to be moribund were taken to necropsy.

Necropsies were performed on all animals and the following tissues sampled for processing (H&E staining) and microscopic examination: abnormal lymph nodes, skin, mandibular lymph nodes, mammary gland, salivary gland, bone marrow, costochondral junction, thymus, larynx, trachea, lungs and bronchi, heart, thyroids, parathyroids, esophagus, stomach, duodenum, jejunum, ileum, colon, mesenteric lymph nodes, liver,

pancreas, spleen, kidneys, adrenals, urinary bladder, seminal vesicles/prostate/testes, ovaries/uterus, brain, and pituitary.

The probability of survival was estimated using the procedure of Kaplan and Meier, with dose-related effects analyzed by the methods of Cox and Tarone. Animals were only excluded if it was determined they died from non-natural causes or were found to be missing. To compare the tumor incidence of a control group with that of a treated group of animals, the one-tailed Fisher exact test was used. The Cochran-Armitage test for linear trend in proportions was used with continuity correction to determine if the slope of the dose-response curve was different from zero at the one-tailed 0.05 significance level. In order to analyze the histologically observed tumors with the weeks of death of the animals, life table methods were used.

Result : Body Weight and Clinical Signs
Mean body weights of both male and female rats dosed with either the low or high dose were observed to be lower than those of the corresponding controls for most of the study. Female rats dosed with the test compound (low or high dose) showed feed consumption to be only 70-80% that of the controls.

Survival
Survival of the high dose males was significantly lower than that of controls and the low dose. Tarone's test indicated a significant ($p<0.001$) dose-related trend in mortality due to shorter survival in the dosed groups than in the control group. The survival for control, low dose and high dose was comparable in females. Male rats treated with either the low or high dose were seen to die prematurely. By week 38 only 30% of the male rats (high dose) were alive. At weeks 29-30, remaining male rats were terminated from the control (49/50 terminated), low dose (40/50 terminated) and high dose (15/50 terminated). This effect was not seen in female rats in which 32/50 rats from the high-dose group lived to the end of the study.

Due to the pre-mature termination of the study for all male rats, histopathologic findings on tumor and non-tumor pathology was not determined.

Pathology
Statistical analysis indicates that the test compound at the high dose increased the incidence of mononuclear cell leukemias affecting multiple organs in female rats when compared to control, where $p=0.011$. When compared to historical controls the trend statistic was $p=0.008$. Observed hepatomegaly and splenomegaly were characteristic of the leukoproliferative disorder. The spleen was reported to be congested and infiltrated by large numbers of poorly differentiated mononuclear cells. The leukemic process spread to and infiltrated the capillary beds of numerous organs.

The incidence of fibroadenomas in the mammary gland of the high-dose female rats was seen to be significantly decreased when compared to control ($p=0.011$).

Due to the compound related mortality in the male rats, the test compound was not adequately tested in male rats.

Test substance : CAS No. 85-68-7

Conclusion : The test compound was determined to be probably carcinogenic to rats due to the increased incidence of mononuclear cell leukemia.

Reliability : (1) valid without restriction
This study is rated a "1" because it followed an accepted test guideline and used appropriate testing procedures.

08.12.2006 (15)

5.5 GENETIC TOXICITY 'IN VITRO'

Type	:	Ames test
System of testing	:	Salmonella typhimurium TA98, TA100, TA1535, TA1537, TA1538
Test concentration	:	up to 10 ul/plate
Cycotoxic concentr.	:	
Metabolic activation	:	with and without
Result	:	negative
Method	:	other
Year	:	1976
GLP	:	no
Test substance	:	other TS: CAS #131-11-3; 1,2-Benzenedicarboxylic acid, dimethyl ester
Remark	:	no cytotoxicity number of replicates: 1
Source	:	Monsanto Europe N.V. Bruxelles
Test substance	:	CAS #131-11-3; 1,2-Benzenedicarboxylic acid, dimethyl ester

05.12.2006 (14)

Type	:	Mouse lymphoma assay
System of testing	:	L5178Y mouse lymphoma cells
Test concentration	:	up to 1.25 ul/ml
Cycotoxic concentr.	:	
Metabolic activation	:	with and without
Result	:	negative
Method	:	other
Year	:	1976
GLP	:	no
Test substance	:	other TS: CAS #131-11-3; 1,2-Benzenedicarboxylic acid, dimethyl ester
Remark	:	cytotoxicity was observed at 1.25 ul/ml number of replicates: 1
Source	:	Monsanto Europe N.V. Bruxelles
Test substance	:	CAS #131-11-3; 1,2-Benzenedicarboxylic acid, dimethyl ester

05.12.2006 (13)

Type	:	Cytogenetic assay
System of testing	:	CHO cells
Test concentration	:	
Cycotoxic concentr.	:	
Metabolic activation	:	with and without
Result	:	negative
Method	:	other
Year	:	1987
GLP	:	no data
Test substance	:	other TS: CAS #131-11-3; 1,2-Benzenedicarboxylic acid, dimethyl ester
Source	:	Monsanto Europe N.V. Bruxelles
Test substance	:	CAS #131-11-3; 1,2-Benzenedicarboxylic acid, dimethyl ester

05.12.2006 (8)

5.6 GENETIC TOXICITY 'IN VIVO'

5.7 CARCINOGENICITY

5.8.1 TOXICITY TO FERTILITY

Type	:	One generation study
Species	:	rat
Sex	:	male/female
Strain	:	Wistar
Route of admin.	:	oral feed
Exposure period	:	until weaning
Frequency of treatm.	:	daily
Premating exposure period		
Male	:	10 weeks
Female	:	2 weeks
Duration of test	:	192 days
No. of generation studies	:	
Doses	:	0.2, 0.4, 0.8
Control group	:	yes
NOAEL parental	:	= 206 mg/kg bw
NOAEL F1 offspring	:	= 418 mg/kg bw
Method	:	Directive 87/302/EEC, part B, p. 43 "One-generation reproduction toxicity test"
Year	:	1987
GLP	:	yes
Test substance	:	other TS: CAS #131-11-3; 1,2-Benzenedicarboxylic acid, dimethyl ester
Remark	:	0.2, 0.4, 0.8% in diet = 108, 206, 418 mg/kg bw/day for M = 106, 217, 448 mg/kg bw/day for F
Result	:	1) 0.2% in diet: no effects in parents and offspring 2) 0.4% in diet: no effects in parents and offspring 3) 0.8% in diet: F0 body weight,decr,F; F0 liver weight, incr, F; F1b pup body weight, decr, only on day 21; no histopathological findings.
Source	:	Monsanto Europe N.V. Bruxelles
Test substance	:	CAS #131-11-3; 1,2-Benzenedicarboxylic acid, dimethyl ester purity = 98.1% a 1:1 blend of two products

05.12.2006 (27)

Type	:	Fertility
Species	:	rat
Sex	:	male/female
Strain	:	other: CD
Route of admin.	:	other: dietary
Exposure period	:	F0/F1 generation males - 10 weeks prior to mating, through mating period, and until the scheduled termination period for adults; F0/F1 generation females - 10 weeks prior to mating and through the mating period, gestation, and lacation
Frequency of treatm.	:	continous
Premating exposure period		
Male	:	10 weeks
Female	:	10 weeks
Duration of test	:	Through weaning of F2 generation pups
No. of generation studies	:	2
Doses	:	0, 750, 3750, and 11,250 ppm (target concentrations); 0, 50, 250, 750 mg/kg per day
Control group	:	other: yes, normal diet

NOAEL parental	:	= 3750 ppm
NOAEL F1 offspring	:	= 3750 ppm
NOAEL F2 offspring	:	= 3750 ppm
Method	:	EPA OPPTS 870.3800
Year	:	2004
GLP	:	yes
Test substance	:	other TS: CAS No. 85-68-7

Method : Either a parametric ANOVA under standard assumptions or robust regression method that does not assume homogeneity of variance or normality was used to compare treatment groups to the concurrent control group. The homogeneity of variance assumption was examined via Levene's test. Dunnett's test was used for all pairwise comparisons to the vehicle control group. One exception was made in that a two-tailed test was used for parental and pup body weight and organ weight parameters, feed consumption, percent males/litter, and anogenital distance. All indicies were analyzed by Chi-square test for Independence for differences among treatment groups and by the Cochran-Armitage test for Linear Trend on Proportions. A Fisher's Exact probability test was used for pairwise comparisons between each treatment group and the control group when Chi-square revealed significance. A test to identify statistical outliers was performed on parental body weights and feed consumption and on parental and weanling necropsy organ weights. A significance limit of 0.05 (one or two-tailed) was used as the criterion for significance in all tests.

Remark : Parental Systemic Toxicity

F0 and F1 parental systemic toxicity was only observed at the high dose (11,250 ppm). F1 male body weights were significantly reduced throughout the entire pre-breed and mating periods. F0 and F1 females showed reduced body weights at 11,250ppm throughout the pre-breed period, gestation (GD 0, 7, 14, 20), and lactation (PND 0, 4, 7, 14).

Upon necropsy, liver and kidney weights were increased as described:
F0 males and females (11,250 ppm) - increased absolute (males: 12%; females: 13%) and relative (males: 14%; females: 16%) liver weight
F1 males (3750 ppm) - increased absolute (9%) and relative (6%) liver weights
F0 males (11,250 ppm) - increased absolute (7%) and relative (9%) kidney weights
F0 females (11,250 ppm) - increased relative (8%) kidney weights
F0 females and F1 males (3750 ppm) - increased absolute (F0 female: 6%; F1 male: 11%) and relative (F0 female: 6%; F1 male: 7%) kidney weights
F0 males and F1 females (3750 ppm) - increased absolute (F0 male: 7%; F1 female: 8%) kidney weight

Parental Reproductive Toxicity

There was no evidence for reproductive toxicity at any dose in F0 males.

F0 females exhibited reduced absolute and relative weights of the paired ovaries and uterus at necropsy at 11,250ppm in the absence of any differences in ovarian primordial follicle count.

Exposure of F1 males to the high dose reduced mating and fertility indicies, absolute testes, epidiymides, seminal vesicles and absolute and relative prostate weights. Epidiymal sperm concentration was reduced by 31%, % motile sperm by 33%, and % progressively motile sperm by 35%. An increase in gross and histopathologic findings in the testis and epididymis were also observed. Gross male reproductive tract malformations included hypospadias, missing reproductive organs and abnormal size/shape of reproductive organs.

Exposure of F1 females to the high dose, reduced mating and fertility indicies, uterine implantation sites and total and live pups per litter on PND 0, ovarian weights, and the number of litters and number of total and live pups/litter at birth. Increases were observed in the incidence of fluid-filled uteri and absolute and relative uterine weight.

Offspring Toxicity

Two male F1 culled pups at PND 4 from the high dose group showed undescended testes. Of the F1 weanlings at necropsy, both F1 males and F1 females from the high dose group exhibited reduced terminal body weights, reduced absolute thymus weights (males: 17%; females: 22%), reduced absolute (males: 29%; females: 34%) and relative (males: 12%; females: 14%) spleen weights, and reduced absolute (males: 3%; females: 4%) and increased relative (males: 16%; females: 19%) brain weights. F1 males also exhibited reduced absolute (26%) and relative (10%) testes weights at 11,250 ppm and decreased absolute (23%) epididymal weight, with relative epididymal weight unaffected. Increased absolute (8%) and relative (6%) testes weight was also observed at 3750 ppm in the F1 males. With 11,250ppm F1 weanling females exhibited reduced absolute (24%) ovarian and uterine (20%) weights, with relative weights of both organs unaffected. Gross reproductive organ malformations occurred in 32.9% of F1 males at 11,250 ppm and included missing epididymis, missing small epididymis(ides), small testis, and undescended testis(es).

Only 1 male F2 culled pup from the 11,250ppm group exhibited hypospadias at PND 4. With the F2 weanling pups, both male and females at 11,250 ppm exhibited reduced terminal body weights, reduced absolute thymus weights (male: 14%; female: 15%), reduced absolute (male: 27%; female: 26%) and relative (male: 18%; female: 17%) spleen weights, and increased relative brain weights (male: 10%; female: 10%). F2 males also exhibited reduced absolute (20%) and relative (9%) testes weights at 11, 250 ppm. Of the 54 F2 male weanlings, 24.17% exhibited gross malformation at 11,250 ppm. These included missing uni- or bilateral seminal vesicles and missing uni- or bilateral epididymis(mides). F2 female weanlings showed reduced absolute ovarian weights (19%) at 11,250ppm and increased absolute uterine weight (14%) at 3750 ppm with no effects on uterine weight at the high dose.

F1 and F2 male reproductive developmental effects at 11,250 ppm included reduced anogenital distance (AGD), increased retention of nipples/areolae and delayed acquisition of puberty.

Male AGD was shortened in a dose-related pattern. Reduced AGD occurred at 11,250 ppm for F1 males in the presence of reduced body weight at birth and at 11,250 ppm for F2 males and 3750 ppm for F1 and F2 males in the absence of reduced body weights at birth. Historical control values for F2 male AGD are1.96 - 2.25 mm. With 11,250ppm, F1 and F2 male mean AGDs in this study were 1.71 and 1.77 mm respectively. With 3750 ppm, the F1 and F2 male mean AGDs in this study were 1.89 and 1.99 mm respectively.

At the high dose, F1 preweanling males showed an increase in the incidence (number of pups) of retained nipples and/or areolae and severity (number per pup). Control values for F1 and F2 % male pups with ±1 areola were 2.63 and 2.13, respectively. Following 11,250 ppm, values increased for F1 and F2 to 32.3 and 72.15% respectively. The number of nipples/male increased from 0.00 (control) to 0.72 and 0.51 for F1 and F2 pups respectively.

For both male and female F1 pups, the age at preputial separation (males) or vaginal patency (females) was delayed significantly by an average of 4.3

and 2.7 days respectively.

Result : REPRODUCTIVE EFFECTS
F0 generation
NOAEL = 3750 ppm in the diet (approx 250 mg/kg/day)
LOAEL = 11,250 ppm in the diet (approx 750 mg/kg/day)

F1 generation
NOAEL = 3750 ppm in the diet (approx 250 mg/kg/day)
LOAEL = 11,250 ppm in the diet (approx 750 mg/kg/day)

PARENTAL SYSTEMIC TOXICITY
F0, F1 generations
NOAEL = 3750 ppm in the diet (approx 250 mg/kg/day)
LOAEL = 11,250 ppm in the diet (approx 750 mg/kg/day)

OFFSPRING TOXICITY
F1 generation
NOAEL = 3750 ppm in the diet (approx 250 mg/kg/day)
LOAEL = 11,250 ppm in the diet (approx 750 mg/kg/day)

F2 generation
NOAEL = 3750 ppm in the diet (approx 250 mg/kg/day)
LOAEL = 11,250 ppm in the diet (approx 750 mg/kg/day)

The consumption of the test substance at 750, 3750, or 11,250 ppm in the diet ranged from approx. 40 (end of prebreed) to 150 mg/kg/day (last week of lactation), 180-760 mg/kg/day and 590-2330 mg/kg/day, respectively, depending on age, and sex of the animals and the phas of the study.

Test condition : Target concentrations of 750, 3750, and 11,250 ppm of test material was administered continuously in the diet. Thirty males and 30 females per group in the F0 and F1 generations were exposed for 10 weeks prior to mating, through the mating, gestation, lactation periods, and until scheduled sacrifice dates for adults. Animals in the F2 generation were sacrificed after weaning on postnatal day 21.

Endpoints evaluated for parental toxicity (F0 and F1) included: mortality, clinical observations, body weights, food consumption, reproductive parameters (estrous cyclicity (3 weeks before mating and throughout cohabitation and at necropsy), mean gestation length, number of mated/fertile animals, number of implantations, number of live/dead pups delivered), sperm parameters (number, motility, morphology), organ weights (uterus, ovaries, testes, epididymides, seminal vesicles, prostate, brain, pituitary gland, adrenal glands, pancreas, liver, kidneys, spleen), necropsy observations, and histopathological findings (with special attention on reproductive organs).

Endpoints evaluated for developmental toxicity (F1 and/or F2 pups) included: litter size, mortality (number of live/dead pups at birth, number of live/dead pups during lactation (until weaning)), clinical observations, body weights, sex ratio (at birth and at weaning), physical abnormalities, sexual maturation (preputial separation, vaginal opening, anogenital distance, nipple development), organ weights (brain, spleen, thymus, liver, kidneys, testes, epididymides, seminal vesicles, ovaries, uterus with cervix and vagina), necropsy observations, and histopathological findings.

Test substance : CAS No. 85-68-7

Reliability : (1) valid without restriction
This study is rated a "1" because it followed an accepted test guideline and used appropriate testing procedures.

Flag : Critical study for SIDS endpoint
08.12.2006 (28)

5.8.2 DEVELOPMENTAL TOXICITY/TERATOGENICITY

Species	:	mouse
Sex	:	female
Strain	:	CD-1
Route of admin.	:	oral feed
Exposure period	:	days 6-15 of gestation
Frequency of treatm.	:	daily
Duration of test	:	19 days
Doses	:	0.1, 0.5, 1.25, 2.0%
Control group	:	yes
NOAEL maternal tox.	:	= 182 mg/kg bw
NOAEL teratogen.	:	= 182 - mg/kg bw
Method	:	Directive 87/302/EEC, part B, p. 24 "Teratogenicity test - rodent and non-rodent"
Year	:	1987
GLP	:	no data
Test substance	:	other TS: CAS #131-11-3; 1,2-Benzenedicarboxylic acid, dimethyl ester
Remark	:	Developmental toxicity seen only at levels producing maternal toxicity, 0.1, 0.5, 1.25, 2.0% = 182, 910, 2330, 4120 mg/kgbw/day
Result	:	1) 0.1% in diet: no effects 2) 0.5% in diet: maternal: body weight, decr; liver weight, incr; kidney weight, incr; offspring: resorptions, incr; live litter size, decr; body weight, decr; malformations, incr. 3) 1.25% in diet: maternal: body weight, decr; liver weight, incr; kidney weight, incr; offspring: resorptions, incr; live litter size, decr; body weight, decr; malformations, incr. 4) 2.0% in diet: maternal: body weight, decr; all litters resorbed
Source	:	Monsanto Europe N.V. Bruxelles
Test substance	:	CAS #131-11-3; 1,2-Benzenedicarboxylic acid, dimethyl ester; purity = 96%

05.12.2006 (17) (18)

5.8.3 TOXICITY TO REPRODUCTION, OTHER STUDIES

5.9 SPECIFIC INVESTIGATIONS

5.10 EXPOSURE EXPERIENCE

Remark : Workers in a PVC processing plant, exposed to diisodecyl phthalate and/or butylbenzyl phthalate in the air, showed statistically higher levels of phthalate acid ester (not specified) in urine than workers of the control group; contrary to earlier finding no clinically obvious cases of polyneuropathy were detected.

Source : Monsanto Europe N.V. Bruxelles
05.07.2006 (16)

5.11 ADDITIONAL REMARKS

Type : adsorption

Remark : About 30 % of the dose was excreted in the urine and feces within 7 days. About 45 % of the dose remained at the application site.
male Fischer 344 rats received a single dermal application of 30-40 mg/kg (5-8 mg/cm2) of 14C-BBP on their backs. The BBP was applied in ethanol. The site was clipped of hair prior to application and covered with a perforated cap after treatment. The rats were restrained and housed for 7 days in metabolic cages to collect urine and feces.

Source : Monsanto Europe N.V. Bruxelles
05.07.2006 (6)

Type : Chemobiokinetics general studies

Remark : Male Fischer 344 rats were dosed with 14C-BBP at 2, 20, 200, or 2000 mg/kg orally or 20 mg/kg intravenously.
urine, feces, bile, and tissues were collecred at intervals and analyzed for parent compound and metabolites.

Source : Monsanto Europe N.V. Bruxelles
05.07.2006 (5)

Type : Chemobiokinetics general studies

Remark : Excreted about 80 % of the radioactivity in the urine and about 20 % in the feces.

Source : Monsanto Europe N.V. Bruxelles
05.07.2006 (12)

Type : Neurotoxicity

Remark : 1) 500 mg/kg bw/day: no effects; NOEL
2) 1500 mg/kg bw/day: body weight, decr.
3) 3000 mg/kg bw/day: body weight, decr; hindlimb, stiffness, incr.
CD rats (10/sex/group) received 500, 1500, and 3000 mg/kg bw/d for 6 weeks. Afterwards, rats were evaluated for neuropathological changes.

Source : Monsanto Europe N.V. Bruxelles
05.07.2006 (20)

6.1 ANALYTICAL METHODS

6.2 DETECTION AND IDENTIFICATION

7.1 FUNCTION

7.2 EFFECTS ON ORGANISMS TO BE CONTROLLED

7.3 ORGANISMS TO BE PROTECTED

7.4 USER

7.5 RESISTANCE

8.1 METHODS HANDLING AND STORING

8.2 FIRE GUIDANCE

8.3 EMERGENCY MEASURES

8.4 POSSIB. OF RENDERING SUBST. HARMLESS

8.5 WASTE MANAGEMENT

8.6 SIDE-EFFECTS DETECTION

8.7 SUBSTANCE REGISTERED AS DANGEROUS FOR GROUND WATER

8.8 REACTIVITY TOWARDS CONTAINER MATERIAL

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10.1 END POINT SUMMARY

10.2 HAZARD SUMMARY

10.3 RISK ASSESSMENT